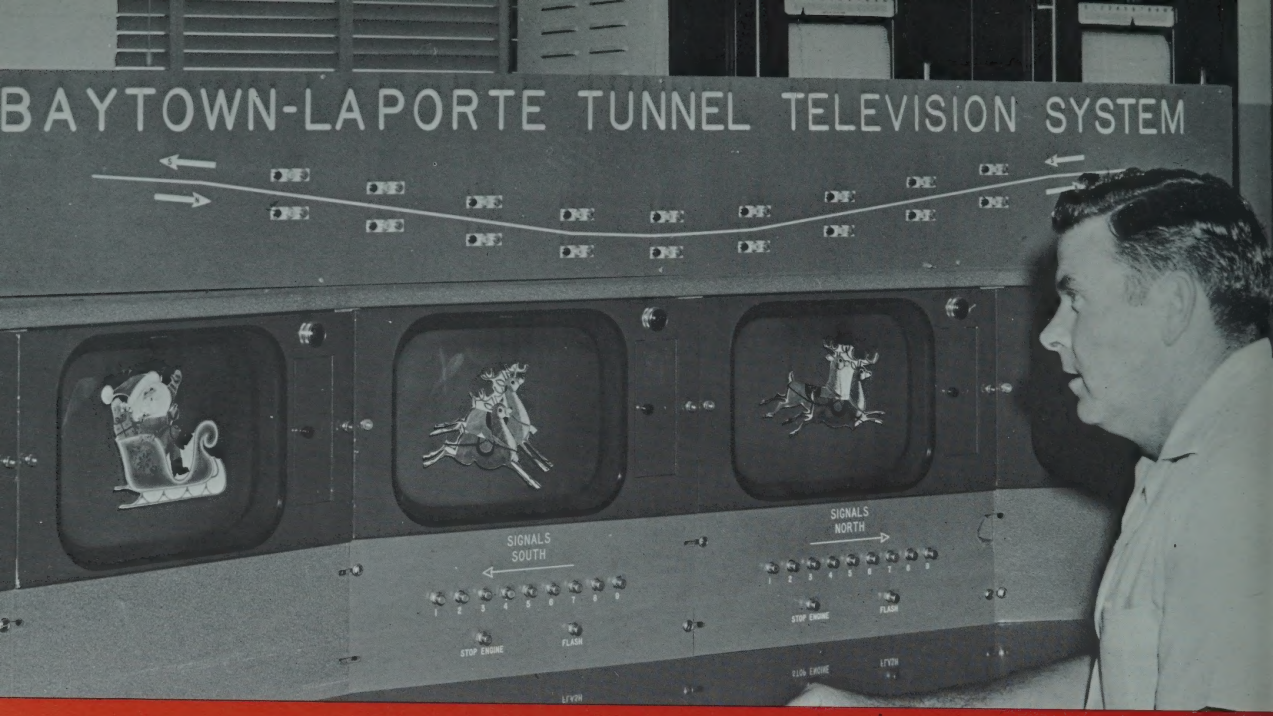
Texas Highways

December 1965



Is it a bird? Is it a plane? No, it's Santa Claus and his reindeer flying through the Baytown-LaPorte tunnel on Christmas eve. Lavelle Varner, tunnel machinery operator, witnessed the unexpected event that was captured on film by F. W. Brown, District 12.

Each district throughout the state has its own way of observing the holiday season. Last year District 20 at Beaumont greeted passing motorists with a huge card bearing season's greetings. The letters are white on an Interstate green highway sign. Photograph courtesy Beaumont Journal.

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About Our Cover

Santa and his reindeer arrived early this year to put two Hill Country children in the driver's seat. Though they wouldn't dream of a white Christmas, their expectations of Santa are the same as those of children in chillier climes. The story of these reindeer that seek winter green pastures near Bend, Texas, is on page 8. Photograph by Jack Lewis.

Safer Highways Mean a Happier New Year

The Texas Highway Commission gave Texas motorists an early Christmas present this year. In mid-November the Commission approved a two-year $350 million consolidated highway program and described it as "one of the most important in the history of the Texas Highway Department."

State Highway Engineer D. C. Greer stressed the program's many safety features, the protection of investment previously made from highway user tax funds, and the immediate benefits that will add to the safe and efficient movement of traffic over the Texas highway system.

Governor John Connally expressed his appreciation for safety features included in the new program.

"It is extremely gratifying," he said, "that some 52 per cent of this $350 million program is classified as safety projects. The Highway Department and the Commission are concerned not only with building highways, but with the safety of the citizens who will use those highways."

The Commission approved projects to cost $337.9 million, with $12.7 million being held in reserve for future assignment. The ultimate program will approximate $350.6 million. The program includes 1,809 miles of construction and reconstruction of primary highways at an estimated $262.8 million.

Betterment work for improved travel conditions and protection of investment on 3,143 miles of primary highways is included in the program at an estimated cost of $24.1 million. Farm and Ranch to Market Roads came in for their share of betterment, $31.6 million for 3,930 miles of existing roads.

Highway safety features will cost an estimated $174.7 million for some 1,900 miles. This covers such things as widening existing lanes, construction of additional lanes, paving shoulders, widening structures, and building grade separations, barrier fences and guard fences.

The safety projects take on added significance in light of a recent report from the Department of Public Safety. Their third-quarter report showed 94 fewer deaths on U.S., State, and Interstate highways as of last October 1 than in the same period in 1964. Fifty-seven fewer accidents were also reported.

Former betterment programs, built-in safety features, and continued upgrading of all highways, especially the primary system, are important factors in this reduction of needless accidents and deaths.

The new consolidated highway program will mean a Happy New Year this year and every year for scores of motorists—a happy year in saving lives and property.

THE BIG SYSTEM

THE FEDERAL AID HIGHWAY ACT of 1962 specified that cities over 50,000 population requesting federal funds for highway projects must have a comprehensive, cooperative, and continuing urban transportation planning program. The Highway Department, with cooperation from 22 urban areas, has been able to make thorough investigations into the travel patterns of the state's urban complexes.

At the outset there was one major problem facing highway engineers. The millions of bits of information gathered in such a study required analysis by computers, and there was no computer program in the United States that could handle traffic assignments for a metropolitan area such as Dallas and Fort Worth.

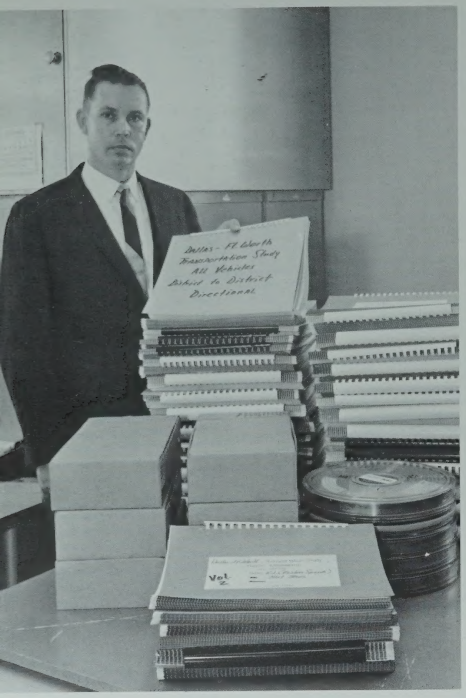
But thanks to a young mathematician, the Department now has a computer program that can handle the complex problem. Appropriately enough, engineers have dubbed it the Big System.

The Big System is a series of computer programs that makes it possible for highway engineers to develop a comprehensive, coordinated plan for streets and highways capable of handling future traffic loads in all our urban areas.

Until the Big System was developed by Charles Blumentritt, a mathematician at the Texas Transportation Institute, the Highway Department's research arm at Texas A&M University, there was no way Department engineers could study a large urban area as one highway network. In fact, when this project was begun, there was no program in the entire United States that could calculate a system with more than 4,000 intersections and traffic zones, far below the number that must be included to plan an efficient highway network in the larger urban areas. In some major cities, for instance, engineers have been able to study traffic flow only on expressways; they have had to ignore the major arterial streets that should be included in a comprehensive urban transportation program.

In one year, armed only with a

By Frank Lively, Editor, Texas Highways



James P. Olson, head of Urban Analysis, displays some of the data-reduction material for the Dallas-Fort Worth O-D study: two stacks in the background of printouts from 600,000 tabulating cards, six boxes of cards used for building the highway network in the computer, four tapes with traffic volume information, and in front four books with final results of the Big System run.

research grant from the Highway Department, several pounds of blank paper and a few sharp pencils, Blumentritt developed a computer program that can handle data for up to 16,000 intersections and traffic zones, and do a job that would be virtually impossible without the computer. Calculations for an urban transportation plan that can be made in about two hours by the computer at a cost of $550, Blumentritt estimates, could be handled by no less than a thousand men, given about four years and a few million dollars.

Joe Wright, traffic manager in Planning Survey Division, is highly pleased with Blumentritt's Big System.

"He was able to program this project," Wright said, "because he learned the background of our problem. He studied the 'why' of the situation, learned how information would be available to him, and he was able to give us the program we wanted."

The Bureau of Public Roads was also impressed with Blumentritt's mental dexterity with computers. The Bureau awarded him a $22,000 grant for a one-year study to develop a network of minimum time paths between all counties in the United States.

Frank Frey, urban engineer in Highway Design Division, says the Big System is "as good a system assignment as any in the U. S. and

probably the only completely operative one for an area the size of Dallas-Fort Worth."

First to receive the Big System scrutiny is the Dallas-Fort Worth urban complex, an area 70 miles east to west by 40 miles that includes all of Dallas and Tarrant counties and fringes of seven others. The area also includes 1,500,000 people, most of them with automobiles. Population is expected to reach 4,202,000 by 1985, the target date of this urban transportation study. Today motorists drive 8.2 million vehicle-miles a day in the area, and engineers predict they will be driving 25 million vehicle-miles daily by 1985.

The transportation study is a coordinated endeavor to provide adequate transportation for the area for both the present and the future. The planning office, located in Arlington, is headed by J. R. Stone, district administrative engineer from Fort Worth. With the cooperation of the cities in the area, his office is conducting all studies except the travel patterns. Travel pattern studies were handled by Planning Survey Division under the supervision of John Waggoner, traffic survey supervisor.

Stone's office is busy with studies of economics of the area, population, land use, existing transportation facilities (railroads, airlines, buses, etc.), terminal and transfer facilities, traffic control features, zoning ordinances and building codes, financial resources, and social and community value factors, such as parks and aesthetics.

Personnel from Stone's office, the Planning Survey Division, and local city engineers divided the intensive study area into 7,100 traffic zones

It takes a heap of cards to make an O-D study. John Waggoner poses beside a stack of 600,000 tabulating cards used for origin-destination studies in the Dallas-Fort Worth area. Waggoner, traffic survey supervisor in Planning Survey Division, was project manager for the study.

Charles Blumentritt, father of the Big System, explains the operation to Jack Keese, executive director of TTI; Charles Pinnell, head of Design and Traffic Engineering, TTI; and Joe Wright, traffic manager, Planning Survey Division, Austin.

on the basis of similar land use. By combining some of the zones, engineers reduced the number to 3,000 "centroids." The study of the existing highway network in the Dallas-Fort Worth area is based on these 3,000 centroids plus 5,500 major intersections.

Wright believes that the traffic network for the area in 1985 will include more than 12,000 centroids and intersections, still well within the capabilities of the Big System.

John Waggoner's group conducted origin-destination studies, gathering data by personal interview and electronic traffic-counting machines. Interviewers visited 32,000 homes to find out the origin and destination of all trips made the day before, the number of persons making the trips, mode of transportation, purpose of the trips, and time of day they were made.

In addition, Planning Survey Personnel set up traffic counting equipment on a 24-hour basis at 8,000 locations within the area. This phase of the study also included 37 stations where they interviewed 105,000 motorists entering and leaving the study area and questioned the drivers in the same manner as those interviewed in their homes.

Central business districts in Fort Worth and Dallas also came in for extensive study. Manual counts were made of the number of vehicles and persons entering and leaving the downtown areas between 7 a.m. and 6 p.m. All parking areas, including lots, garages, truck and bus stops, and curb parking, were inventoried.

A 10 per cent sample of all trucks and taxis registered in the urban areas was selected and the drivers were interviewed to ascertain their origin and destination, time of day

trips were made, and commodities carried. There were more than 9,200 of these interviews.

A comparison of the number of vehicles counted by the automatic equipment and the number of vehicle trips developed from origin-destination study showed the origin-destination studies to be 94 per cent accurate—and any accuracy over 85 per cent in such studies is considered acceptable, according to Wright.

After the traffic surveys were made, Planning Survey personnel next carried out travel-time studies of all expressways and major arterial streets. An automobile equipped with a machine to record distance and time was driven 8,000 miles, covering all major thoroughfares in the study area three times. Travel times between intersections were noted, as were all stops, and the information was coded with the reason shown for all stops.

The distance between intersections was also measured on a large map of the area prepared by Stone's office that showed all expressways and major arterial streets. By dividing the distance between intersections, known as "links," by the average speed recorded for that particular link, the traffic engineers were able to calculate the velocity over the links and add that information to the computer's memory bank.

At one time there were as many as 235 people working in Waggoner's office, including 115 women who coded all the origin-destination data. To record the volume of information gathered during an eight-month period, they used 600,000 punch cards.

Data from the 600,000 punch cards were transferred to tape by the computer and basic data tabulations prepared at the Camp Hubbard computer center. Trip volume tapes were also prepared and sent to Data Processing Center for traffic assignments by the IBM 7094 computer.

When link velocities and intersection data are fed into the computer, it searches for the minimum time path from each centroid to all other centroids. When this information is sketched on paper, a figure results that resembles the branches of a tree. It takes the computer less than one second to build a "tree" by searching out the 3,000 minimum-time paths for each centroid. In an hour and a half, the computer can complete trees for all 3,000 centroids.

Next, the computer "loads" the trees with the actual traffic volume assigned to each link, computes the number of turns at each intersection, and records the direction the vehicles are moving.

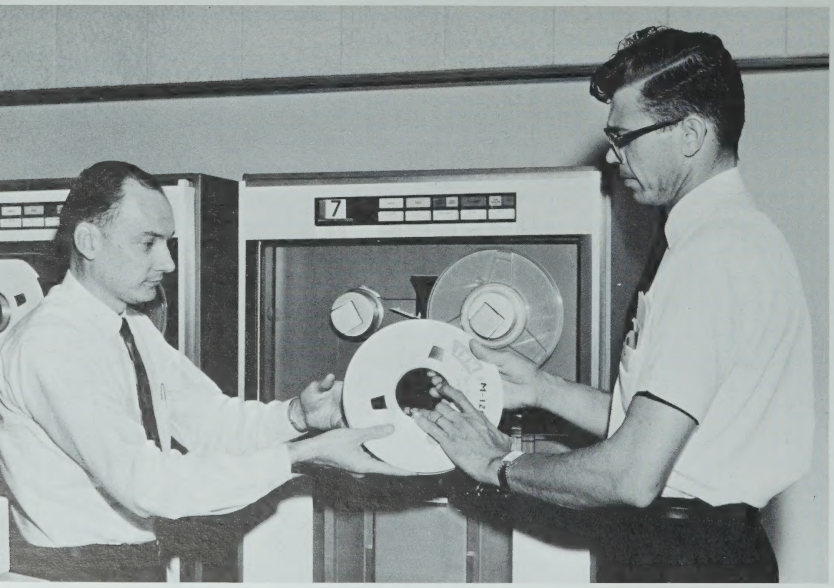
The computer then develops trip length distribution and total vehicle hours and vehicle miles by system and by areas.

An IBM Printer types this information on printout sheets at the rate of 600 lines a minute. The sheets give, by intersection, the number of vehicles entering and leaving, the name of the intersection, and direction of traffic (a total of 20 movements is possible at intersections).

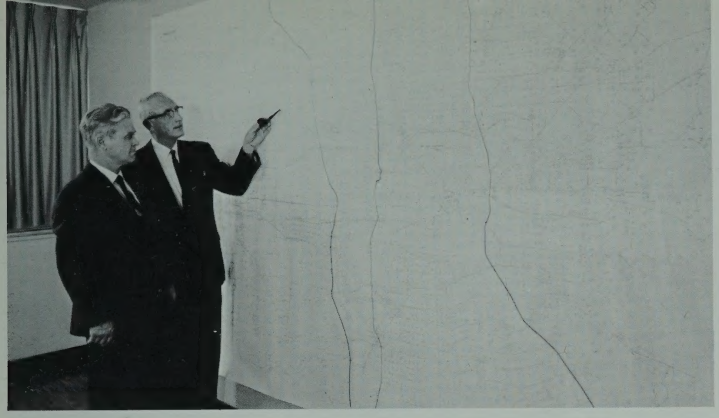
The printout sheets, with data on about nine intersections printed on each, are bound and sent to planning engineers in the Fort Worth-Dallas area and to Highway Design Division by Planning Survey.

As part of the systems analysis, engineers in the Arlington office are now busy developing proposed expressways and arterial systems. Data on projected traffic movements on these systems is being fed to the computers, and Big System analysis begins this month. Engineers will study the results of overloaded streets, other needed streets, etc. The final step in the computer program will be to run the Big System with 1985 projected peak hour traffic for morning and evening rush hours.

Since most highway programs are



It keeps two men busy feeding tapes to the IBM 7094 computer for a highway network analysis of the Dallas-Fort Worth area. Charles Blumentritt, left, of TTI, and Ben Barton change one of 20 tapes used during the two-hour run. Barton is a traffic survey supervisor in Planning Survey Division.



Standing before a huge map of the highway and street network in Tarrant and Dallas counties, Joe Wright (with pipe) discusses zone and intersection data with Frank Frey, urban engineer in Highway Design Division.

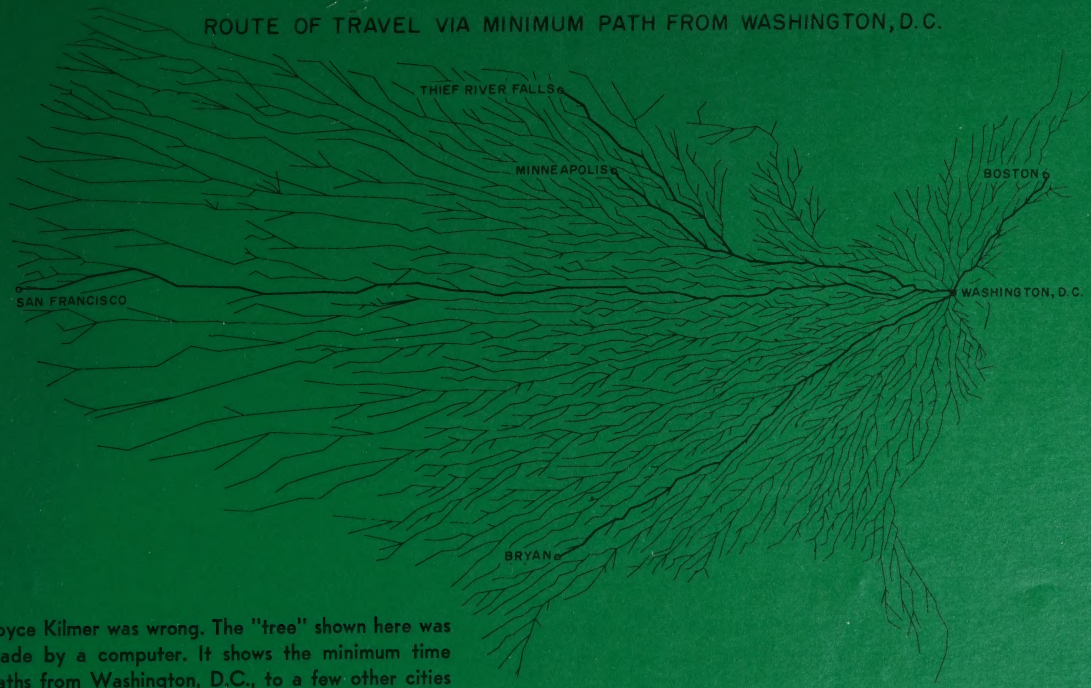
planned about five years in advance, Planning Survey Division is running data through the computer now on projected highway facilities for 1970 as well as those for 1985. The Big System also makes it possible to study 1970 facilities under projected 1985 traffic volumes. With this valuable information, the design engineers can make any needed changes in their proposed systems while it is still in the planning stages.

The new computer program is already aiding the traffic engineer. A soon to be completed road—a section of I.H. 20 in Dallas, for instance—can be added to a computer run for analysis of its effect on traffic on other existing roads in the area. This will aid traffic engineers in deciding where to add or remove traffic lights and stop signs, convert traffic to one way, etc. Since the entire system can be analyzed quickly, day-to-day operational changes can be studied this way as easily as 20-year projections.

When Blumentritt first ran the Big System, the analysis took four hours. By revising and updating his methods, he has cut the run time to about two hours.

Joe Wright envisions even faster programs in the near future. In another year the Data Processing Center will have a computer that is 10 times faster than the present one with twice its memory capacity.

The Big System seems destined to give highway design engineers the "Big Picture" they must have to build highways for the future. ■



Joyce Kilmer was wrong. The "tree" shown here was made by a computer. It shows the minimum time paths from Washington, D.C., to a few other cities in the United States.

Reindeer Ready for Texas Takeoff

FROM THE NORTH POLE to Bend in Central Texas it's 3,500 miles, as the reindeer flies. For the rest of us, it is somewhat farther via various highway routes, concluding with F.M. 580 between Lampasas and San Saba.

Nevertheless, a team of reindeer is stationed at Bend. Four of them are native Alaskans. But the fifth wheel is no Alaskan; he's a Texan, born and bred. Born near Goldthwaite, not far from Bend, he is one of only two reindeer ever raised from birth in the non-Alaskan United States.

The Texan's name? Rudolph.

His nose? It lights up, of course, to guide the other four, just as the song suggests. No magic here; a battery in his harness does the trick.

The five of them come to Bend every year, in September. They come by truck, by trailer truck on the highway, saving the fancy stuff for December.

And their trainer, Earl Wharton, comes, too. Each Christmas season he fetches them, yokes them, hitches them to a sleigh. He hires a merry Santa Claus to complete the package, and then off they go, touring midwestern and eastern states and performing at shopping centers and in parades and such.

This has been going on for 17 years. It all began when Grady Carothers, a friend and neighbor of Wharton's, imported a herd of reindeer from Alaska to his ranch near Goldthwaite. It was his idea to break them, train them, and lease them to assorted locales as an additional measure of Christmas joy.

Thus he began a unique business, as far as the United States goes.

When Carothers moved to California, he took his deer with him to perform at a year-round "Santa Village" operation. The deer became acclimatized to the West Coast, and that's their home now.

But Wharton, Carothers' partner still, peels off five of them annually in the fall and pastures them in Texas. After their Yule Season jaunts East, they graze in the Hill Country for another month or two, and then return to their California kin. There are about 15 of them, and they stay busy during December too, playing at California shopping centers and parade routes.

One of them is Rudolph's brother, the only other reindeer born and raised in the non-Alaskan U. S. His name is Vixen, and he is a native of Goldthwaite, too.

Nice to know, isn't it, that Vixen is a Texan?

And Merry Christmas to you all. . .

Git Along, Little Reindeer: Teamed up on a Hill Country ranch are four reindeer, namely, Cupid, Comet, Dancer, and Vixen (their leader, Rudolph of the prominent nose, wandered out of camera range at an inopportune moment). Earl Wharton, their trainer and master, displays also the highway rig that takes the reindeer to various Christmas celebrations around the country. On Christmas Eve, of course, they fly a route all their own.

Prize Bridge of 1965

THE DEVILS RIVER BRIDGE spanning the Amistad Reservoir area northwest of Del Rio has been selected for an American Institute of Steel Construction 1965 Prize Bridge Award. The Devils River Bridge won the top "Prize Bridge" award in the Medium Span-High Clearance category.

In making the award, the judges remarked, "This is one of the most graceful bridges we have seen. It shows great thought, great economy, great restraint and is a perfectly beautiful piece of design. It is gracefully done and respects the landscape in which it is built.

"The designer has given the deck a rhythm-like treatment. The repetition of the same theme in all of the piers seems to minimize the extra height and lends credence to the total design. It is a very pleasing design.

"Here again the designer has treated the railings so that the motorist will have a view of the adjoining landscape."

John K. Edmonds, executive vice-president of the AISC, wrote, "It is our great pleasure to acknowledge your vital contribution to the growing number of beautiful bridges throughout the country. . . . This year there were 67 entries from which there were selected five Prize Bridges and 10 Award of Merit Bridges. The Devils River Bridge won the top "Prize Bridge" award in the Medium Span-High Clearance category. In view of the exceptional quality of the entries and the challenge they presented to the jury, you may feel justifiably proud of this citation."

The Devils River Bridge is not the first to bring home the prize; Texas Highway Department bridges have been honored on three previous occasions. The Neches River Bridge in Beaumont (1952), the Robert Street underpass in Fort Worth (1953), the Buffalo Bayou Bridges in Houston (1956) have all been singled out as prize bridges by the American Institute of Steel Construction.

Completed in December 1964 at a cost of $4.5 million, the Devils River Bridge was designed by the Bridge Division, Texas Highway Department. According to Bridge Engineer Clyde Silvus, "The Devils River Bridge is not the design of any one man. A dozen or more of our engineers worked on it."

General contractor was H. B. Zachry Company, San Antonio, and steel fabricator was the Mosher Steel Company, Houston.

"Although we didn't actually design the bridge ourselves, District 22 is also mighty proud of the AISC award," said Chester Parsons. district engineer. "This award gives recognition to the Highway Department and to our designers who are often the unsung heroes. District 22 doesn't have too much in the way of highways, but now we have the distinction of having two of the most beautiful bridges in the state (Devils River and Pecos River Bridges), if not in the nation." ■

The last roadside park completed by the Highway Department is this safety rest area in District 24, 12 miles west of Sierra Blanca on I.H. 10. The gaily decorated tepees, made of steel beams and concrete stucco, are a far cry from yesterday's simple frame structures, but the use of native stone for tables is still practical and attractive.

Paving the Way With Beauty

"BEAUTY PAYS its own way," Herbert C. Petry Jr., chairman of the Texas Highway Commission, has asserted, and that has been the philosophy of the Texas Highway Department since the mid 1930's when the Department first became beauty conscious.

From the first "Save the Trees" campaign initiated in 1932 by a former Highway Commission member, the late Judge W. R. Ely, the Highway Department efforts to provide beauty as you ride have expanded to the point where now nearly $50 million annually is spent on sodding alone.

And beauty pays. "Beauty is a material that may be used functionally like asphalt or Portland cement. The beauty of Texas highways saves taxpayers' money," Petry continued. "It saves drivers' lives. It is only coincidental—and I do not mean to demean the coincidence—that the beauty of Texas highways is a joy to those who travel them."

Consider: Gradually sloping highway shoulders and rights of way remove more water than ugly ditches, and at less cost to the soil and highway structures. Grass, shrubs, trees and wildflowers planted along roadsides prevent erosion, lengthen the roadway's life, and reduce maintenance costs. Often it's cheaper and more practical to skirt a mountain vista or a lake than to build straight through, thereby giving travelers a "fringe benefit" of beauty with little increase in mileage. Trees and flowering shrubs are used as indicators to draw the motorist's attention to a dangerous intersection, a curve, a bridge ahead.

Does it pay? Maintenance costs in Texas average only 15 per cent of the highway budget, whereas the national average is 25 per cent.

Roy Rodman, supervising landscape architect, says, "There's no way to estimate how much our roadside planting programs have affected overall maintenance costs, but everyone agrees they play an important part."

The Highway Department was quick to respond to the Highway Beautification Act of 1965. "We welcome this additional opportunity to make driving on Texas highways a safer, more pleasant experience for the motoring public," Petry commented. "We will examine the bill closely to effectively and quickly expand the continuing highway beautification program developed by the Texas Highway Department many years ago."

In an administrative order, State Highway Engineer D. C. Greer has called on all district engineers to submit their recommendations for the 1966-67 (2-year) $10 million Highway Beautification Program. Funds for this program are to be spent as provided under the "Landscaping and Scenic Enhancement" section of the Highway Beautification Act of 1965.

District engineers must submit plans for spending their share of the federal funds by December 15. Landscape architects from the Maintenance Operations Division in Austin are ready to assist district engineers with their long range planning. There is no "wait till next year" about it; the money is available for projects now. Half must be obligated by June 30, 1966, or it will revert to the Federal Treasury.

"We shall form a program, get it started, and carry out the intents and purposes of the Highway Beautification Act as best we can legally," promises Rodman.

According to the Federal Highway Administration's progress report on highway beautification, Texas leads

In the early thirties, the Highway Department built roadside parks like this one in Hunt County southwest of Greenville on the old Highway 1.

the nation in long-range landscape planning on its Interstate highways. The state has completed 82 miles of Interstate landscaping, and has 441 miles to be beautified next year. After 1966, another 2,276 miles of the Texas Interstate system will undergo landscaping.

In plans for landscaping along primary highways, Texas is second only to Pennsylvania. That state has 6,606 miles marked for beautification after 1966, whereas Texas has 5,752.

Federal money in the program comes from the General Revenue Fund, and not from the Highway Trust Fund or from regular highway allocations.

Title I of the act, concerned with the regulation of outdoor advertising along highways, and Title II, on the removal or screening of junkyards, call for matching of Federal funds with State, on a 75-25 basis, and refer to Federal Aid Primary highways and Interstate highways. "It appears at this time that it will definitely be necessary that we have State legislation before we can take full advantage of these two portions of the Act," Greer has pointed out, "with the sole exception of screening, by planting or by fencing, of the junkyard areas where such is possible."

Title III of the Act, covering landscaping and scenic enhancement, provides the Highway Department with the major allocation of Federal funds. They may be utilized 100 per cent without State matching money.

These funds are to be used on the Federal Aid Primary System, the Federal Aid Secondary System, and on the Interstate System. They may be used for scenic development and roadside beautification, both on the right of way and off the right of way. They may be used for the purchase of scenic overlooks, selected scenic areas, roadside rest areas, and for scenic development and beautification of the rest areas.

Projects that may be included in the planned program for each district fall in the following categories:

Plantings: Any planting of trees, shrubs or other plant material on the highway right of way or in rest areas and roadside parks, as well as scenic easements.

Rest Area and Roadside Park Sites: The purchase of needed sites on the Interstate, Primary, and Secondary highway systems.

Construction of Rest Areas and Roadside Parks: Roadway work as well as all fixtures for the facility and any other development in the area is to be included. On the Interstate and controlled access highways, toilet facilities will be included in those rest areas where water can be obtained either from wells or water systems to provide for flush type disposal utilizing a septic tank and tile drain system.

Irrigation Systems: Installation of irrigation systems can be included on controlled access facilities in

An early example of highway beautification: In April 1934 trees and shrubs were planted along the right of way of the newly completed Highway 66 in San Antonio near the San Jose mission.

areas where irrigation is needed and water is available without cost to the Highway Department.

Scenic Easements: Easements should be obtained at those locations where they are necessary in order to preserve scenic views. Any development or work necessary on these easements should also be included.

Screening Unsightly Areas: Whenever it is practical, the screening of unsightly areas next to the right of way should be included in the beautification program. Generally, the screening will be limited to earth mounds with a vegetative cover, or plantings of trees and shrubs that will impair vision beyond the right of way line. Unsightly borrow pits that can be improved through minor reshaping should also be included in the program. The screening of junkyards will not be included since it is covered by Title II of the Highway Beautification Act.

Turf for Beautification: On freeways or controlled access highways in urban areas, establishment and maintenance of turf on the right of way will be included. Its appearance must be pleasing at all times, a lawn that presents a neat, well-trimmed impression to the passerby.

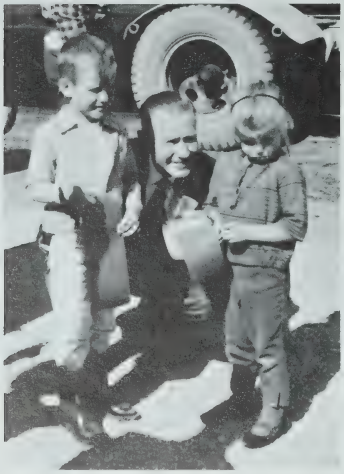
In a recent article in *Texas Parade* magazine, Supervising Landscape Architect Roy Rodman stated, "We have learned to consider beauty as a basic factor in design. We've barely scratched the surface in this exciting field. In Texas, anyway, we're going to give more and more attention to the question of making our highways more beautiful, and more pleasurable."

The Highway Beautification Act of 1965 is a giant step in this direction. ■

Thirty-one years later, the Highway Department is still planting trees on the roadsides; these will grace the right of way on I.H. 10 near Beaumont.

BETTER HIGHWAYS, BY A DAM SITE

D. C. Greer chats with Senior Resident Engineer Elton Myers of Athens at the dedication of Cedar Creek Reservoir highway relocations.



State Highway Engineer D. C. Greer presents souvenirs of the ribbon cutting to Larry and Lisa Greenhaw.

THE ICE AGE obligingly scooped out lake beds to give Minnesota the title of "land of lakes." In Texas, it's a do-it-yourself project —and that includes highway facilities around the new inland waters, too.

Newest of the highway relocation projects around the many man-made reservoir projects in progress in Texas is at Cedar Creek Reservoir in Kaufman and Henderson Counties. Although the dam is scheduled to be closed only this month, the area already is on the grow.

"The Cedar Creek Reservoir is almost 'Boom Town, U.S.A.' again," State Highway Engineer D. C. Greer said in dedicating 14 miles of new roads and bridges around the lake site recently.

Slashing the traditional ribbon, Greer, a former resident of nearby Athens, officially opened the $3.2 million worth of new highway facilities.

Then he turned to two Fort Worth youngsters, Larry and Lisa Greenhaw, among the crowd of 500 gathered on F.M. 85 between two of the longest bridges in the project.

Handing each of the youngsters a sliver of the ribbon, he told them, "When you visit this area as a man and a woman, you'll remember that it was dedicated to you and others of your generation."

The reservoir, covering 38,000 acres, extends almost 18 miles from S.H. 274 in Henderson County northward to U.S. 175 in Kaufman County. It was constructed by the Tarrant County Water Control and Improvement District No. 1 at a cost of $55 million to store precious water for the use of Fort Worth's thirsty thousands. The water district also picked up $2.3 million of the highway adjustment tab.

Greer paid tribute to officials of the water district and nearby cities and counties for their cooperation during the relocation program.

"In my 37 years with the Highway Department," Greer said, "I have never encountered a project where greater accord with the public was involved. These men were broad in their scope and we can't pay enough compliments to them. It was a smooth, even-tempered and efficient endeavor."

Also on the program was Charles Hawn of Athens, former member of the Texas Highway Commission, who

Cedar Creek Bridge on F.M. 85 spans dry land now, but soon water in the new reservoir will shimmer below it.

said, "This is a magnificent job."

About nine and one-half miles of roads and bridges were adjusted around the shoreline-to-be of the reservoir in Henderson County, including more than two miles of bridges. In Kaufman County, the remainder of the project included two spans to carry U.S. 175 across portions of the sprawling reservoir.

Representing the water district were Joe B. Hogsett, chairman of the board, and Ben Hickey, general manager. Others participating were State Rep. Bill Hollowell, Henderson County Judge R. H. Lee and Kaufman County Judge Ivy C. Fuselier.

Highway Department officials on hand included District Engineers W. W. Potter of Tyler and B. L. DeBerry of Dallas, Construction Engineer Jed N. Robinson and Senior Resident Engineer Elton Myers of Athens.

The spillway of the dam is expected to be closed before the end of the year. Although it will be several years before the lake is filled, the water is expected to be sufficiently deep next summer for boaters and fishermen.

The lakeside highway network is ready for them now ■

Making the opening of the Cedar Creek Reservoir highway relocations official are, from left, Tyler District Engineer W. W. Potter, partially obscured behind Construction Engineer Jed N. Robinson, Kaufman County Judge R. H. Lee, Senior Resident Engineer Elton Myers of Athens, State Highway Engineer D. C. Greer, former Highway Commission member Charles Hawn of Athens, Dallas District Engineer B. L. DeBerry and Kaufman County Judge Ivy Fuselier.

This section of I.H. 10 south of Boerne was constructed using the procedures for flexible base control developed in District 15.

Walter E. Ehlers
Senior Resident Engineer
Boerne, District 15

FLEXIBLE BASE

UNTIL RECENTLY we in the Boerne Residency relied on an educated guess to determine the amount of flexible base we would need for base sections. When we were shy of the proposed depth, we did not know whether to question the loads received or the allowance we had made for shrinkage.

Then along came the now popular practice of weighing flexible base material, and after a short struggle to resist change we are now using this method extensively in District 15. It has removed the anxiety over the size of loads we experienced when we used the loose cubic yard unit as a unit of measure.

On our last two construction projects we developed certain procedures that simplified the field work for weighing base and gave closer tolerances and better control of quantities than we have had on projects when we used other methods.

The first step in the new procedure is to determine the apparent Actual Density (D_A) of the material from the designated material source by preliminary laboratory tests. Actual Density is the dry weight per cubic foot of the material as determined by Test Method Tex 114-E. With this knowledge, it is possible to figure closely the amount in tons of flexible base that will be needed.

The following criteria are used to estimate the quantity for each grade of flexible base specified per 100-foot station:

When 98% density is required:

Quantity per Station = (Solid Volume x D_A + Allowance for Contingencies

When 100% density is required:

Quantity per Station = Solid Volume x (D_A + 1.0) + Allowance for Contingencies

Amount to be allowed for contingencies:

For quantity of 100 tons or less per station, add 4 tons

Example: 60 tons + 4 tons—Use 64 tons

CONTROL

For quantity of 100 tons to 130 tons per station, add 4%
Example: 120 tons x 1.04 = 124.8 tons—Use 125 tons
For quantity of 130 tons to 190 tons per station, add 3.5%
For quantity of 190 tons or more per station, add 3.0%

The allowance for contingencies takes care of deficiencies that may exist in finished subgrades or bottom base courses, possible slight variations in base widths, and the small amount customarily acceptable for the base finishing operation. This contingency quantity also allows for the extra amount needed when the road density is greater than planned. These various factors tend to increase the amount of base material needed since there are usually no compensating or offsetting factors. The contingency allowance method has practically eliminated the previous problems of either spot dumping on deficient base sections or shifting excess base material from sections over dumped.

Before changing to our present method for estimating a contingency allowance, we figured the loose unit weight of the material from the designated source multiplied by the solid volume and then by an estimated shrinkage factor. Often the quantity calculated in this manner was wrong. If the discrepancy was corrected during construction, the result was an overrun or an underrun in the contract amount of base. And if such an underrun was large, it created a problem for the contractor who had based his unit price on the estimated quantity shown in the plans.

Stockpiling and Testing

The first step after a project has been contracted is to determine the D_A of base material being processed by the contractor's crushing plant. A slight variance will probably be found between the D_A of samples originally taken from the source and the D_A of the material being processed by the contractor. A slight variance will also be found in base from different crushing plants using materials from the same source.

If stockpiling is required, it is necessary to know the actual D_A so that the proper amount of material can be stockpiled. We have found that we can get a fairly accurate account of the total tonnage in a stockpile by multiplying the Loose Density (D_L), as determined by Test Method Tex 114-E, by the geometrically calculated stockpile volume.

All job control tests on material are performed as it is being placed in the stockpile—one fourth of the tests on samples taken from day to day production, one fourth at different times from the partially completed stockpile, and one half from the completed stockpile.

Samples from the completed stockpile are also used to determine the exact D_A of the material. This density is the one used in controlling the compaction requirements on the project and in arriving at the amount of material to be dumped for any given thickness and width of course.

Stockpiles are required to be constructed in maximum lifts of two feet and to a maximum height of 20 feet. This allows for easy core drilling of the stockpile for sampling and for easy loading.

Thomas F. Stein, engineering aide II, uses Dump Distance Chart to direct dumping of flexible base for I.H. 10 construction in Kendall County.

Dump Distance Charts

For our use in the Boerne Residency we have prepared Dump Distance Charts for quick computation of the proper spacing of loads. The charts have been prepared to allow for variations in moisture from 1.0 per cent to 9.0 per cent at 1.0 per cent intervals.

We have found these charts to be very helpful. The checker at the scales is relieved of having to determine the net weight (dry) and the dump distance. He has to make only one subtraction to compute the net weight (wet) in pounds.

With these charts the deduction for moisture content is more accurate, since the moisture determination can be made on the material actually delivered that day instead of using the moisture rating from a previous day. In other words, even though a Dump Distance Chart allowing for 5.0 per cent moisture is used to space the loads, if the moisture is found to be 4.0 per cent, then 4.0 per cent is entered on each ticket and a 4.0 per cent deduction is made from the total net weight (wet) shown on the form CX-2 (Tabulation of Haul Tickets Issued).

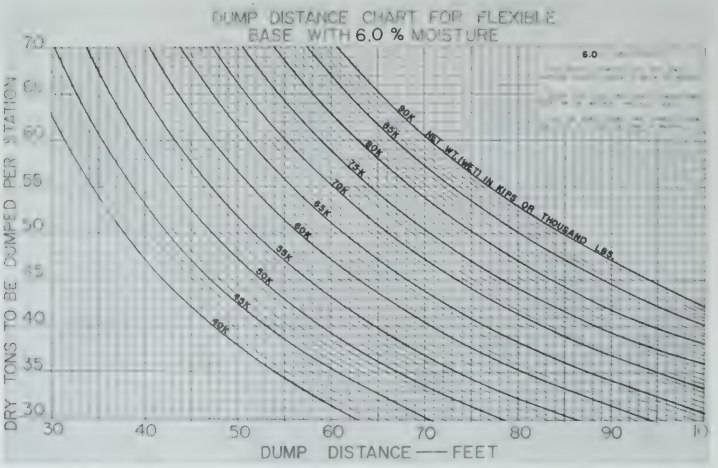
A 1.0 per cent difference in moisture affects the dump distance only slightly, but it makes quite a difference in the total pay quantity each day.

We have prepared a board with a plastic cover for road checkers to write on when filling out pertinent road data information. The Dump Distance Charts can be slipped under the plastic cover for protection, and the board also has a clip for storing tickets. Our checkers have found it useful to color, in light shades, the spaces on the chart that represent the majority of the loads. For instance, if most of the loads are running between 55,000 and 60,000 pounds (net weight wet), coloring the spaces between these lines aids the checker in marking the chart quickly for dump distance.

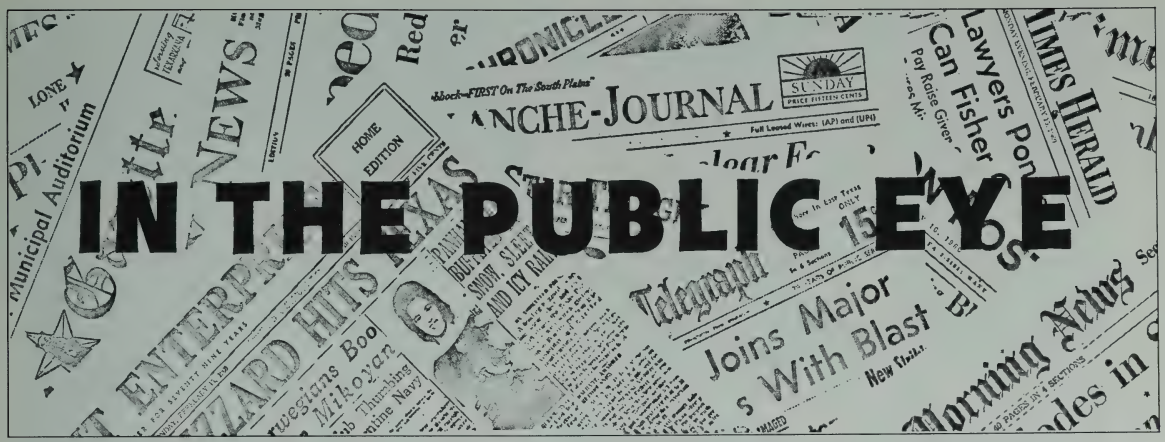
If preferred, the Dump Distance Charts can be used by the checker at the scales, and the dump distance put on the tickets at that point with the moisture content noted on the ticket after the actual moisture for that day has been determined.

Through these procedures we maintain excellent control of our flexible base quantities all the way from the initial planning stage of a project to the finished base section. An important byproduct from these procedures is that the flexible base operation is now actually serving as a check on the quality of our field control and of our inspection of the grading and base operations.

If flexible base quantities are based on the actual D_A of the material and properly engineered contingencies are allowed for, "The base has got to make bluetops." ■



This Dump Distance Chart is computed for 6.0 per cent moisture in flexible base material. Notes on each chart explain how to use it.



SECOND BRIDGE AT LAREDO

The **Laredo Times** reports—"Nuevo Laredo backers of a second international bridge will soon request a joint meeting with proponents and officials from Laredo to discuss sites for a proposed new span, Mayor Ernesto Ferrara of Nuevo Laredo said.

"Mayor Ferrara, who returned this week from Mexico City, said he felt opinion was favorable for a second international bridge in federal government circles.

"He said one of the important decisions would be on location of the proposed bridge.

"Laredo officials, including Mayor Joe C. Martin Jr., have indicated the primary site under consideration is one directly south of and in line with the new Expressway.

"Texas Highway Department officials have said a survey shows there are no historical sites in that area."

HIGHLY DESIRABLE GOAL

The inclusion of Wichita Falls on the Interstate highway system is a highly desirable goal, according to the **Wichita Falls Times**—"Expressway highways radiating from Wichita Falls and built to Interstate standards should be extensively completed within the next five or six years, when the IHS is scheduled for completion, and their existence will offer transportation in and out of Wichita Falls the excellence of comparable facilities. However, there are additional benefits to be derived from being placed on the super-road system.

"The IHS system is receiving wide publicity and this is helpful to all cities on the routes regardless of their size.

"Only two of the metropolitan centers of Texas are not linked to one or more IHS routes. Wichita Falls is one of those centers.

"When the IHS is completed, it is believed that additions will be considered. By preparing a good case now the chances should be improved for inclusion when the appropriate time arrives."

PLAN AHEAD

The San Angelo Standard-Times expresses concern—"Outspoken concern is beginning to emanate from Texas regarding the future of the federal aid interstate highway program and we believe that Congress should give the matter serious consideration.

"Texas has no cause to complain over its allocations under the 1956-72 aid program. And the Legislature's provision of matching funds and the State Highway Commission's farsighted planning and able administration have enabled this state to achieve maximum participation in interstate highway development. But this state, among others, faces a serious problem of planning, timing and funding under the existing schedule for extending the interstate program beyond 1972.

"The states need to know well before 1972 whether and how the interstate program will be extended."

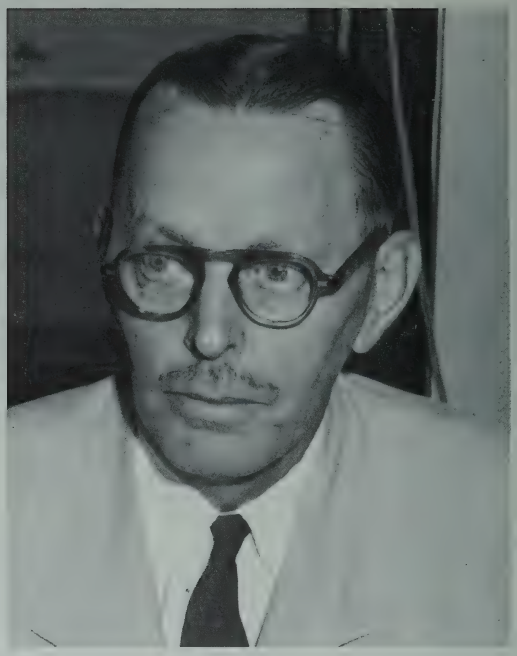
DIRTY WINDOWS

Fred Pool, writing in **East Texas** magazine, admonishes—"If you had the occasion to drive through the countryside of East Texas after the Labor Day weekend, let us hope you were appalled by the utter disregard of travelling America for the conditions in which they left our highways and public parks!

"It is axiomatic that we cannot see beauty through a dirty window, and yet our highways are the 'windows' through which we are asking our friends to evaluate and enjoy the beauty that is ours.

"We have more roadside parks and rest stops than any other state in the union, and yet this convenience is not appreciated by many, else they would leave them in better shape when they move on.

A Fond Farewell for Faltinson



RAY C. FALTINSON
Engineer-Director, Operations Division, 1945-1965

ABOUT 3:15 on the fourth of November, we walked into the Big Hearing Room, saw a mass of people, and were told, "You're late. The party's over."

My friend was teasing, of course, for the party honoring Ray C. Faltinson's retirement and 36-year Departmental tenure had begun only 15 minutes earlier. What he meant was that so many people had shown up early that it already was a good-sized affair. And before it was over, two hours later, more than 400 people had said "farewell" to Faltinson, engineer-director of Operations Division.

Helping him accept congratulations and sentimental goodbyes were his wife, Jo, son and daughter-in-law, Harlan and Blossom Burns, and two grandchildren, Lan and Price.

It was a double celebration, actually. Although there were no candles on the sheet cake, the chocolate cake was a special tribute to the Division Head's sixty-fifth birthday.

"I've made him a chocolate birthday cake—his favorite—for the past eight years," said Libby Davis. Libby, one of Faltinson's Girl Fridays in his second-floor Main Building Austin office, was one of the "honchos" behind the big party.

"Carolyn (Kerlin) and Agnes (Montgomery) and I catered the party, but we couldn't have done it without Bessie Barrow and George Coleman," acknowledged Libby. "They're experts at that sort of thing."

Before the crowd descended, Faltinson's division, around 162 strong, gathered for a private party and presentation of their parting gift—three pieces of luggage. Knowing their boss's dislike of ceremonial functions, the employes had the luggage, unwrapped, displayed on one corner of the long wood counter.

Competing for attention at the other end of the counter was a mammoth bouquet of bronze, gold, and yellow chrysanthemums. Three dozen flowers and lace-topped tables laden with goodies gave the somber room—more accustomed to bid readings and delegation talk—a festive air.

People filled the hard, wood-

Ed Bluestein, recently retired district engineer of District 14, paid a return call to the Highway Department to bid farewell to retiring Ray Faltinson and his wife Jo.

backed seats, spilled over into the aisles, and created a traffic jam in front of the auditorium. After signing the guest book and shaking Faltinson's hand, well-wishers drank gallons of coffee and punch, and ate 70 dozen cookies. At one point the receiving line was so long it resembled one queuing for a top-drawing movie on Saturday night. But they were all there—this was the biggest retirement party yet—to pay homage to a friend and faithful member of the Highway family.

Faltinson has been with the Department since 1929. After attending Iowa State College—he is a native Iowan—Faltinson spent seven years with highway departments in Iowa and Alabama. In 1929 he moved to Texas and this is where he's stayed.

He began his career with the Texas Highway Department as assistant office engineer in Road Design Division, later becoming a resident engineer. In 1936, he was promoted to manager of Road Life Studies and Financial Survey in Planning Survey Division. On October 1, 1945, he was appointed head of Operations Division, and this has been his work for the past 20 years.

In announcing the veteran engineer's retirement, effective November 30, State Highway Engineer D. C. Greer said, "Under his direction, the Division has rendered services to the Highway Department of great value and (his) direction of these activities has been a credit to his administrative and engineering abilities."

He's been a credit to the community, too. A member of the Texas Society of Professional Engineers, Faltinson served on the committee on electronics of the American Association of State Highway Officials and is a deacon in the University Presbyterian Church.

Faltinson's future is yet uncertain, but at press time he was considering proposals that would continue his public service on a foreign assignment. And if he accepts the assignment he'll take with him three pieces of luggage, knowledge of a satisfying, rewarding career, and the best wishes of a host of friends in the Texas Highway Department. ■

—Marjie Mugno

Henry Heads New Automation Division

HUBERT A. HENRY
Engineer-Director, Division of Automation

A NEW DIVISION OF AUTOMATION was created on December 1 within the top-level administration of the Texas Highway Department. State Highway Engineer D. C. Greer named Hubert A. Henry, now engineer of photogrammetry, to be engineer-director of the new division.

The Division of Automation is the first new division of the Highway Department since the Right of Way Division was created October 1, 1956.

The move represents a streamlining of administration in the Department with some functions of the old Operations Division being realigned in the new division and others being assigned to the Equipment and Procurement Division.

The Operations Division was dissolved December 1 with the retirement of Ray C. Faltinson, engineer-director of the division for the last 20 years.

The new Division of Automation will include:

1. A reproduction section including blueprinting, offset duplication, photographic reproduction, bookbinding, a typing pool and allied functions.

2. The Department's computer center.

3. Photogrammetry (aerial surveying) and all of its functions.

The computer center will be expanded at a later date and liaison between the center and other divisions of the department will be accelerated.

Henry, head of the new division, is 46. A native of Pleasanton, he attended public schools in San Antonio and Austin.

After two years at The University of Texas, he entered the U. S. Army as a private in 1941. During five years of Army service, he was a specialist in radio, radar and electronics, serving both as an instructor and with tactical units overseas.

After the war, he returned to the University and received a degree in geology. He joined the Highway Department in 1948, working in Highway Design Division.

Later, he headed all geological work in the division and still later, he also was in charge of the division's illumination work.

Henry became a registered professional engineer in 1955 and in 1963 he was placed in charge of the Department's first photogrammetry section. He has directed all photogrammetry activities in the Department for the last 2½ years.

He and his wife have three children, two sons, 13 and 12, and a daughter, 2. ■

BREAKAWAY SIGN RESEARCH

A CAR HIT a "slip-joint" sign erected recently by the Highway Department near Beaumont. A crushed front headlight and a dent in the bumper summed up the damage as the driver escaped injury.

Had the man smashed into the sign 24 hours earlier when the permanent standard was still in place, he probably would have been killed.

Replacement of permanent standards was begun by the Department last January, but research still continues to find the "best" solution for breakaway sign supports.

Texas Transportation Institute at Texas A&M may provide acceptable solutions for highway safety in an 18-month study for better breakaway signs. Twelve states, in cooperation with the Bureau of Public Roads, have pooled their federal aid highway funds in a $367,000 research project which begins this month at TTI.

"Cooperating agencies agreed that the project should be of national scope," said Charles J. Keese, executive director of TTI. After six months of planning, representatives of the 12 states and the Bureau of Public Roads meet at A&M in early December to complete details of the research schedule.

Keese said TTI will consider vehicle crash research information developed in the aerospace field, the automobile industry, and by other agencies to help produce an effective method for saving lives on the nation's highways.

"Some ideas which look impractical now because of costs and other factors might be made practical in the future by American industry," Keese commented.

Keese spoke of the feasibility of using impact attenuation devices to absorb energy.

"Some fixed objects will have to remain . . . ends of bridges and massive supports for overhead signs spanning extremely wide facilities, for instance," he explained. "A possible solution includes redirection of the vehicle through use of guard rails. Another idea is to catch and decelerate the vehicle within the limits of human endurance and safety."

TTI also will study ways to reduce wind loads on massive overhead signs so they can be held in place by less solid supports.

"Preliminary studies indicate we can reduce wind loads 50 per cent by using a design resembling a venetian blind," Keese pointed out. "This information has to be verified and the best designs determined."

Coupled with the study, TTI will evaluate the economics of designing signs which will collapse under extremely high wind velocities.

Keese said researchers will construct signs to collapse under light winds, then adapt the information to higher winds.

Another part of the study involves the feasibility of hinge-type signs which would stand up under heavy wind loads by flapping in the breeze.

Future vehicle crashes into road signs may not be comparable to running into a feather bed, but TTI hopes to make the analogy as true as circumstances will allow. ■

Reminder From Insurance Division

Keep the Can Closed, Clyde

WHAT'S SO DANGEROUS ABOUT GASOLINE? Most persons, of course, have a vague notion, but when it comes to having a real knowledge, most people flunk. They believe they're safe as long as they don't bring a flame near the gasoline. This is far from true.

The real danger of gasoline—the one you must constantly guard against when using it—is the vapor you can't see, but which is always present and which can ignite and flash back into the supply or container.

Everytime you expose gasoline to the air it evaporates rapidly. It gives off about 130 times its bulk in vapor, which in turn converts more than 1,500 times its volume of air into a flammable mixture.

The gasoline-air mixture is ripe for ignition when there are 1.4 to 6 parts of gas vapor per 100 parts of air. In these proportions, any ignition source causes the mixture to expand in a flash to 4,000 times its volume. In other words, explode!

This means that if you let three quarts of gasoline evaporate in an average size room, every cubic foot in that room would come within the explosive range. If touched off by an ignition source, the mixture would ignite with enough force to take the room off the house.

Don't think you can get away with using small quantities of gasoline; it's not the quantity of liquid but the volume of the vapor that is dangerous. Only two ounces of gasoline can vaporize, creating a cubic yard of explosive air.

Store gasoline and use gasoline in proper containers and use only in designated internal combustion engines. Do not use gasoline to ignite fires or for cleaning. ■

A narrow passageway between two roundhouse stalls is reminiscent of a big Old World city. Charred brick walls flake, revealing pink and white undercoats.

For half a century, the railroad roundhouse on Piedras Street in El Paso in District 25 was a city landmark.

The clamor and commotion of a railroad yard dominated the area, with clang-clang-clanging, ting-ting-tinging, and the throbbing and chugging of powerful engines as trains moved back and forth in the nonsensical-looking railroad bustle savvied only by those of the railroad world. Puffs of smoke burst up white and drifted away blue on the breeze.

El Pasoans set their watches to the whistle that once changed shifts of men, who'd come out of the yard with faces blackened by smoke.

A man who had worked his entire life there recalled: "There used to be 7,000 men swarm in here in the mornings. It really used to be something to watch them come in. The whole place used to be full of steam locomotives. The boiler makers would be so busy making boiler heads that you couldn't hear yourself think."

Magnificent in its heydey, the roundhouse remained arresting even in its demise. Gradually, as changing times diminished the role of the railroad in the country, the roundhouse routine ebbed until finally it was used only for storage and diesel engine maintenance, and it began to fall into ill repair.

Bricks crumbled here and there, broken window panes gaped, and soot collected on the walls, until in its last years the roundhouse sprawled like an old abandoned Roman coliseum in ruins.

Now the roundhouse is gone, banished to history by the progress of a new Interstate highway.

In July, the Texas Highway Department and the Southern Pacific Company completed agreements to

the roundhouse

By Carol Nation
Photographs by Jesse White

finish the Piedras-Campbell Street freeway section (I.H. 10), long delayed by the presence of the roundhouse.

District Engineer Joe M. Battle said the U. S. Bureau of Public Roads had made available to the railroad company $1.9 million to move its tracks and roundhouse along the right of way. Work will be completed about November 1966.

A contract has been let for the first phase of the I.H. 10 route, the Cotton Street overpass. Before it is completed, other parts of the route are expected to be contracted.

Downtown construction began in October, with work started on three utility bridges to span the depressed downtown freeway segment.

Battle said the freeway through El Paso will be completed by 1968, providing a 150-mile continuous, limited access, divided Interstate highway from near Las Cruces, N. M., to Van Horn.

The roundhouse was built near the turn of the century for about $30,000 by El Paso and Southwestern Railroad. It was acquired by Southern Pacific in 1924.

Walking through the roundhouse recently presented a curious blend of old and new. Shiny new diesels stood in the aged stalls, numbered 1 to 31, each with an old pot-bellied metal stove burning below in the long, narrow pits where workmen worked under the diesels.

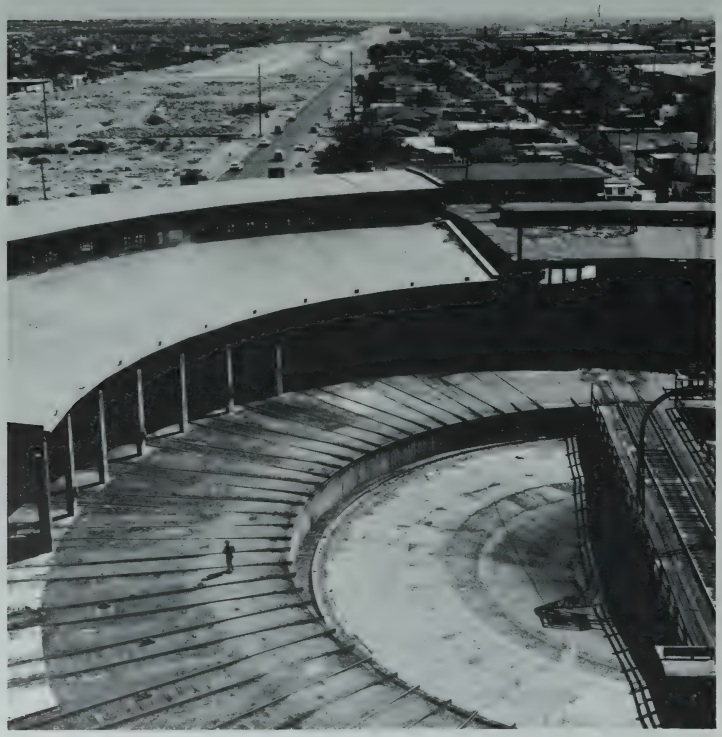
Next to an abandoned blackboarded office building stood a piece of ultra-modern machinery painted bright red. An old passenger car, rusted and streaked with age, was used as an office with an air conditioning unit in the window.

Powered by two electric motors and mobilized by wheels that traveled on a single round track about the big deep work well, the turntable was reminiscent of knighthood days with their castles and drawbridges over moats.

Silver tracks radiated like sunrays from around the turntable. Locomotive stalls rimmed the roundhouse.

Their bright red color long since

View of the old roundhouse looking westward. To the left is the east bound frontage road of I.H. 10. The Southern Pacific Company will remove the roundhouse and tracks in the near future, paving the way for completion of the I.H. 10 project.



Tracks radiate like sunrays from the turntable. Modern diesels get maintenance work in the huge locomotive stalls. To the east behind the roundhouse lies the present end of I.H. 10.

charred black, the bricks of the roundhouse looked like an abstract study in art, as layers of gray and green paint flecked off, showing beneath a mottled medley of red and rust and black and white and dingy yellow.

Ceiling-high windows were smoky gray. Many panes were boarded up with aging, grayed wood; others were broken out, like missing teeth in a jack-o-lantern or the missing pieces of a puzzle.

But even in the dregs of its utility, the great roundhouse was impressive, and disturbingly exciting . . . there was a sense of once-upon-a-time grandeur and importance, impending change, and despair. A feeling of mystery and apprehension hung over the roundhouse . . . as if at any moment a herd of mammoth elephants with giant tusks would come charging and trumpeting out of the dark cavern-like stalls. Standing out of the sun in the shadows of the castle-like building, made chills chase up and down your spine.

And sometimes, for no apparent reason at all, a man working in the dim interior of the roundhouse would yell out "Yahoo!" and it would echo hollowly and strangely. ■

Broken windows frame a Southern Pacific truck and work crews on the railroad turntable making repairs.

SEGUIN GOES LOOPY

"A great attitude . . . and right," reads a notation in ballpoint pen on a clipping circulated recently around the Department's main office in Austin.

The comment is initialed "DCG" and the clipping is from the October 9 issue of the *San Antonio Light.* The article that merited D. C. Greer's approval tells of the delight of the City of Seguin in "going loopy."

Light Staff Writer Hart Stilwell describes it this way:

"The biggest industry in this town is highway construction.

"And when it's all finished—if it ever is— the town will be nestled inside a system of overpasses and underpasses the likes of which you usually see only in bigger cities.

"The people love it. Their attitude is, Loop us and we'll profit from the loops.

"Mayor R. J. Burgess says dozens of businessmen are waiting to build, timing their construction by the highway work.

" 'We definitely have one big motel project assured, along with plenty of smaller businesses,' he says. 'It's just a matter of time.'

"The mayor figures that counting the $3.1 million to be spent on Highway 90 overhauling in the city area, just starting this week, at least $11 million will be spent in the Seguin area in the next three years or so on highways alone.

"And the city is determined to exceed that figure in commercial and industrial development.

New structures will carry State Highway 46 over Farm Road 78, then under the twin lanes of Interstate 10 (top) north of Seguin where modern highways under construction bring a promise of major new development.

"The biggest job is just getting started—the $3.1 million rebuilding of Highway 90 (Interstate 10) for a stretch of 4.5 miles just north of the city.

" 'Sure, it's going to be a mile and a half north of town,' Burgess said. 'But we'll be there to meet it . . . there will be plenty of new businesses established because of it.'

"Then there is Highway 90-A . . . and it is due for an overhauling, also part of the giant federal Interstate program.

"But the new Highway 90-A will come through the town, just as the present one does.

"However, Burgess and other Seguin people figure it is only a matter of time until Highway 90-A is routed south of the city, just as Highway 90 is now being routed north of it.

"Fine . . . more new businesses.

"Then there are two more highways, No. 123, a direct link between Austin and Corpus Christi, and No. 46, which links New Braunfels with Kennedy and points south.

"All in all it adds up to almost a complete set of super highways ringing the city.

"So the busiest man in this area is Raymond Stotzer, regional engineer for the Texas Highway Department . . ." ■

AWARDS

40 Years

District 7
Robbin F. Burns, Skilled Laborer

35 Years

District 23
Therman A. Bowland, Skilled Laborer

30 Years

Accounting Division
William H. Key, Assistant Fiscal Officer

District 1
Ernest T. Witmer, Skilled Laborer

District 4
Oscar E. Brown, Skilled Laborer

District 5
Hilland C. Weaver, Senior Resident Engineer

District 10
Curtis T. Spinks, Skilled Laborer

District 12
Bert DeShazo, Maintenance Construction Foreman III

District 15
Wallis J. Murphy, Maintenance Construction Superintendent
Wilbur C. Raby, District Construction Engineer

25 Years

Planning Survey Division
Robert S. Hamner, Statistician III

District 5
John C. Odam, Skilled Laborer

District 12
Clayton T. Puntch, Skilled Laborer

District 14
Aubrey A. Fariss, Skilled Laborer
August R. Uecker, Skilled Laborer

District 16
Herman Schneeman Jr., District Maintenance Engineer

District 20
Milton T. Abshier, Engineering Aide IV
Thomas A. Griffin, Skilled Laborer

District 21
Shelby T. Crosby, Supervising Right of Way Engineer

District 23
William C. Miller, Shop Foreman IV

District 24
Arturo G. Tapia, Skilled Laborer

RETIREMENTS

Motor Vehicle Division
Bessie L. Lowe, Clerk Typist II

District 2
Johnie P. Glover, Watchman III

District 3
John L. Maroney, Maintenance Construction Foremen III
Raymond L. Medford, Accountant III

District 7
Robbin F. Burns, Skilled Laborer

District 10
Young H. Crear, Semi-Skilled Laborer
Bernie L. Dodd, Inspector III

District 13
Conrad E. Schnaubelt, Skilled Laborer

District 15
Santos Gonzales, Semi-Skilled Laborer
Riley W. Stowe, Maintenance Construction Superintendent

District 16
Thomas O. Foster Jr., District Engineer
Benedict R. McKinney, Maintenance Construction Foreman III

District 17
James M. Riley, Shop Foreman II

District 18
Murse Brown, Skilled Laborer

District 19
Floyd Henderson, Semi-Skilled Laborer

District 24
Francisco S. Fierro, Semi-Skilled Laborer
Laurence E. Wood, District Construction Engineer

District 25
Robert L. Nabers, Assistant District Engineer

Important Highway Contracts Let

A NUMBER OF IMPORTANT construction projects, including one of the largest paving jobs in the history of the Highway Department, were let to contract October 21 and 22 at the Department's regular monthly letting.

Bids totaled $39,206,213.67 for 39 highway projects around the state, in one of the largest lettings in recent months.

The second largest single contract let by the Department was for 4.8 miles of continuously reinforced concrete pavement on I.H. 610 in Houston at a bid price of $8,657,469.66.

Another large contract was let for 17.8 miles of I.H. 45 from its intersection with U.S. 75 about two miles north of Madisonville in Madison County to the intersection with S.H. 7 in Centerville in Leon County. Cost of this project is $5,202,296.36.

With completion of the I.H. 45 project, the four-lane divided highway will be an open, controlled access highway from Centerville to Houston.

The $2.1 million contract for construction of the first section of Spur 366 (Rodgers Expressway) between the Stemmons Expressway and Central Boulevard north of the central business district of Dallas also was let. The section is approximately one mile long and runs from 88 yards east of Magnolia Street to U.S. 75.

Spur 366 will eventually become a high-volume expressway.

A bid of $788,820.60 was accepted for the 3.6-mile second section of Loop 375 from I.H. 10 to the Zaragosa International Bridge east of El Paso.

A $2,013,463.63 contract was let to bring 6.8 miles of I.H. 35 just north of U.S. 290 in Austin to full Interstate standards. ■

That's the Way the Tube Slices

Joel Willson, Maintenance Construction Superintendent
Lubbock, District 5

DISTRICT 5 uses a lot of rubber loops from inner tubes to mark center lines ahead of seal coat jobs. Up to now we have had to cut the strips with scissors.

But now Skilled Laborer Leldon Saunders of Brownfield has developed a gadget that will cut the inner tube into long strips quickly and without so much "tiresome labor."

The "rubber slicer" is a piece of wood 2½ x ¾ x 8 inches, clamped in a work-bench vise. The pencil points to a single-edge razor blade set in a sawed slot at an angle (top). Clearance between blade and end of slot should be the desired width of the rubber strip, in this case one inch.

Right, Saunders shows how the inner tube is actually sliced into strips. ■

To and From Our Readers

Supervisor Comments

Thomas J. Walthall, supervising resident engineer, District 15 in San Antonio, was featured in a recent issue of *Line and Staff Supervisors*, a publication of the National Foremen's Institute.

The article, written by B. K. Anderson of San Antonio, was titled "There's a Time to be Silent" and it concerned Walthall's philosophy of supervision.

"One of the best times for the supervisor to keep silent is after he has assigned a project engineer to a contract development and provided him the guidance required," Walthall said. He said the project engineer must be given maximum latitude in solving problems and completing his plan without interference. After the engineer has finished is the time to review, criticize, and correct, he said.

Walthall presently is project engineer on the huge, multimillion dollar interchange of I.H. 37 and I.H. 10 on the south side of San Antonio.

Steel Bridge Contest

Engineers and engineering students may enter U. S. Steel's $50,000 contest —an international bridge design competition.

Entrants must design a steel overpass to carry a two lane highway at right angles over an Interstate highway, with frontage roads, on level terrain.

First prize in the engineers' classification will be $15,000; second, $10,000; and third, $5,000. There will be 10 honorable mentions of $1,000 each. The best student designs will earn $5,000 first prize, $2,000 second prize, and $1,000 third prize. There will be four honorable mentions of $500 each.

To be eligible, students must attend schools with accredited civil engineering curricula full time and must not be older than 23 by May 31.

For further information, write Robert S. Holmes, General Manager, Highway Construction Marketing, U. S. Steel Corp., 5 Gateway Center, Pittsburgh, Pa., 15320.

Former Director Dies

L. A. Fletcher, director of the Equipment and Procurement Division from 1941 until 1948, died November 3 in Dallas. Death came one month before his 75th birthday. He is survived by his wife, Alice Stage Fletcher, and three children.

A Texan by adoption, Loren Albert Fletcher was born in Buffalo, Minnesota, on December 18, 1889. He attended the University of Illinois for one year, and then transferred to Williams College in Massachusetts to complete his college career.

Fletcher joined the Texas Highway Department as a maintenance superintendent in Abilene in 1923. In 1929, he transferred to the Equipment and Procurement Division in Austin, and he became its director in September 1941. Seven years later Fletcher resigned that post for health reasons and accepted modified service as a research specialist.

Following his retirement in 1953, Fletcher and his family moved to Dallas.

In the Equipment and Procurement Division, employes remember Fletcher as "A perfect gentleman of the old school," yet one who was right up to date in his handling of Department affairs.

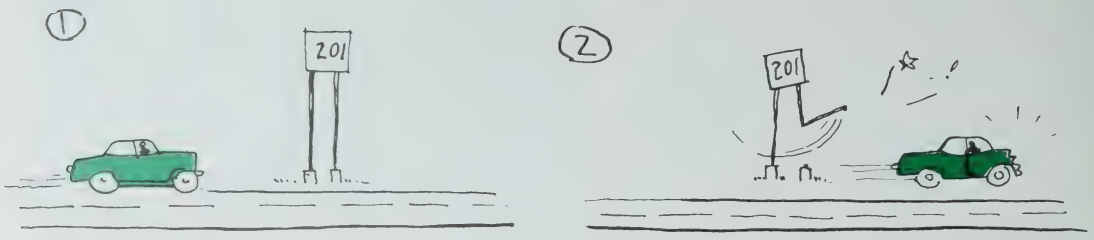
TEXAS HIGHWAY COMMISSION

HERBERT C. PETRY JR.	Chairman
HAL WOODWARD	Member
J. H. KULTGEN	Member
D. C. GREER	State Highway Engineer

Texas Highways

TEXAS HIGHWAYS, official journal of the Texas Highway Department, is published in the interest of highway development in Texas and for departmental education in construction, maintenance, and operation.

TEXAS HIGHWAYS is available to the general public on a subscription basis at $4.50 annually, or it can be purchased for 40 cents a copy. Subscriptions, inquiries, material, or manuscripts should be directed to the Editorial Office, Travel and Information Division, Texas Highway Department, Austin, Texas, 78701 •



Andrews Retires From BPR

Bill L. Andrews, assistant regional engineer, Bureau of Public Roads at Fort Worth, has announced his retirement effective December 30. Andrews has worked for the Bureau for 38 years.

He came to Texas in 1930 and worked in the Austin office until 1942 when he joined the 872nd Aviation Engineering Battalion. After the war, he moved to the Fort Worth district as a design engineer. In 1955, he was promoted to regional design engineer and served in that capacity until 1958, when he was named assistant regional engineer.

Andrews and his wife will retire to her hometown, Brownsville, Tennessee, near some of the "best fishin' holes" in that part of the country.

Bill L. Andrews

Weldon Hart (left) shows Tom H. Taylor the first prize bronze plaque awarded to The Smithville Times for its Highway Week editorial, "Building Highways for Tomorrow." Hart is executive director of the Texas Good Roads Association, sponsor of the annual contest. Taylor is director, Travel and Information Division, Texas Highway Department.

MacDonald Award to Maine

Maine Highway Commissioner David H. Stevens is recipient of this year's Thomas H. MacDonald award for outstanding service in highway engineering. Stevens received the honor at the annual meeting of the American Association of State Highway Officials.

Louis W. Prentiss, executive vice president and secretary of the American Road Builders Association was presented the George S. Bartlett award for outstanding contribution to highway progress.

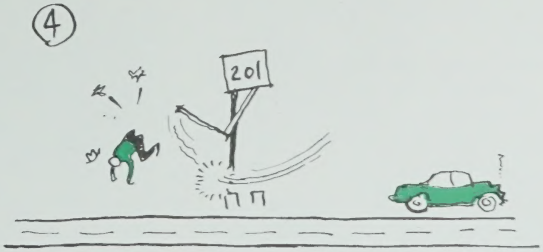
State Highway Engineer D. C. Greer won the MacDonald award last year.

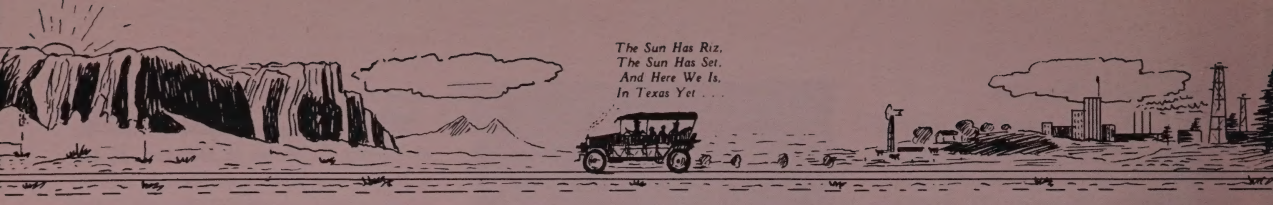
Hard Hat Helps Head

A safety hat probably saved the life of Everett G. Moles in October. Moles, a Dallas southside maintenance section employe, was struck by the rear view mirror of a passing truck while working on U.S. 80 west of Dallas. He was putting some tools in the truck when the mirror caught him on back of the hat. He was knocked to the ground, but, fortunately, suffered only a stiff neck and bruised shoulder.

Moles returned to work the next morning. Fellow employes report he was most pleased with the world and his safety hat. Incidentally, the hat was not damaged.

EVERETT G. MOLES
Happy Man in a Hard Hat





OVER THE HIGHWAYS

Comments . . . from the Traveling Public

• Congratulations and three cheers for our wonderful Texas Highway Department! My husband and I and his brother and wife from San Antonio have just returned from a vacation and hunting trip. We went about 40 miles north of Cortez, Colorado, pulling trailer houses.

The old expression, "You never miss the water till the well runs dry," is true! We never knew what nice, wide, good highways, or what handy, useful roadside parks we enjoy until we got out of Texas.

We four were so happy to get back to Texas—and good roads.

Please continue to maintain the wonderful highways, roadside parks, and signs that we have.

Mrs. P. L. Garner
Corpus Christi

• I have wished several times that I had gotten the young man's address in order to write him personally; but am writing to you to express my appreciation for help received from one of your men as I was returning several weeks ago from Odessa.

While there, I had damaged my gas tank, and had gotten it repaired. But a few miles east of Abilene, the straps that hold the gas tank came loose, leaving me stranded. The only tool I had with me was a pair of pliers.

A young man in a Highway Department station wagon stopped to render aid, and not only loaned us his tools, but got under the car to help replace the straps to get us rolling again. That gave us a mighty fine feeling! And I wish I could say thanks to him again. But at least I will thank the Department for employing such helpful personnel.

Paul H. Allen, Minister
Pine Tree Cumberland
Presbyterian Church
Longview

(District Engineer J. C. Roberts in Abilene investigated and found the helpful highwayman to be Hanford Long, skilled laborer, Abilene.)

• My wife and I drove through eight states during October. Of the 3,900 miles covered, 1,400 were in Texas. These 1,400 miles were driven on Texas U.S. 80, 59, 281, 83, 77, 290, and Interstate 35.

I am writing to congratulate you and all of Texas on your fine highways and courtesy shown by a very large percentage of Texas drivers.

Of all the states we have driven in on this trip and many others, we found Texas highways the finest of all, including our own state of Ohio.

H. E. Dean
Montpelier, Ohio

• We thoroughly enjoyed our too short visit to your grand state of Texas. Besides enjoying the wonderful highways, hospitality and scenery a few of the other highlights were:

At Denison, Eisenhower's birthplace. At Dallas, shopping at Neiman-Marcus. At Tyler, the roses. Nacogdoches, historical sights.

Merle O. Davison
Birmingham, Alabama

• Just received the travel information about Texas from your office, and am amazed at the beautiful brochures and map. After reading this material, I am changing my plans to spend a couple of months there instead of a week.

The information on state parks and facilities is very clear and easy to find on the map, and the road map is so complete and easy to read. I know I shall have no trouble in planning my vacation.

Colonel C. Leonard Boyer,
USA Ret.
Staunton, Virginia

• I need some suplieses for a srapbook. I need a hole bunch of it.

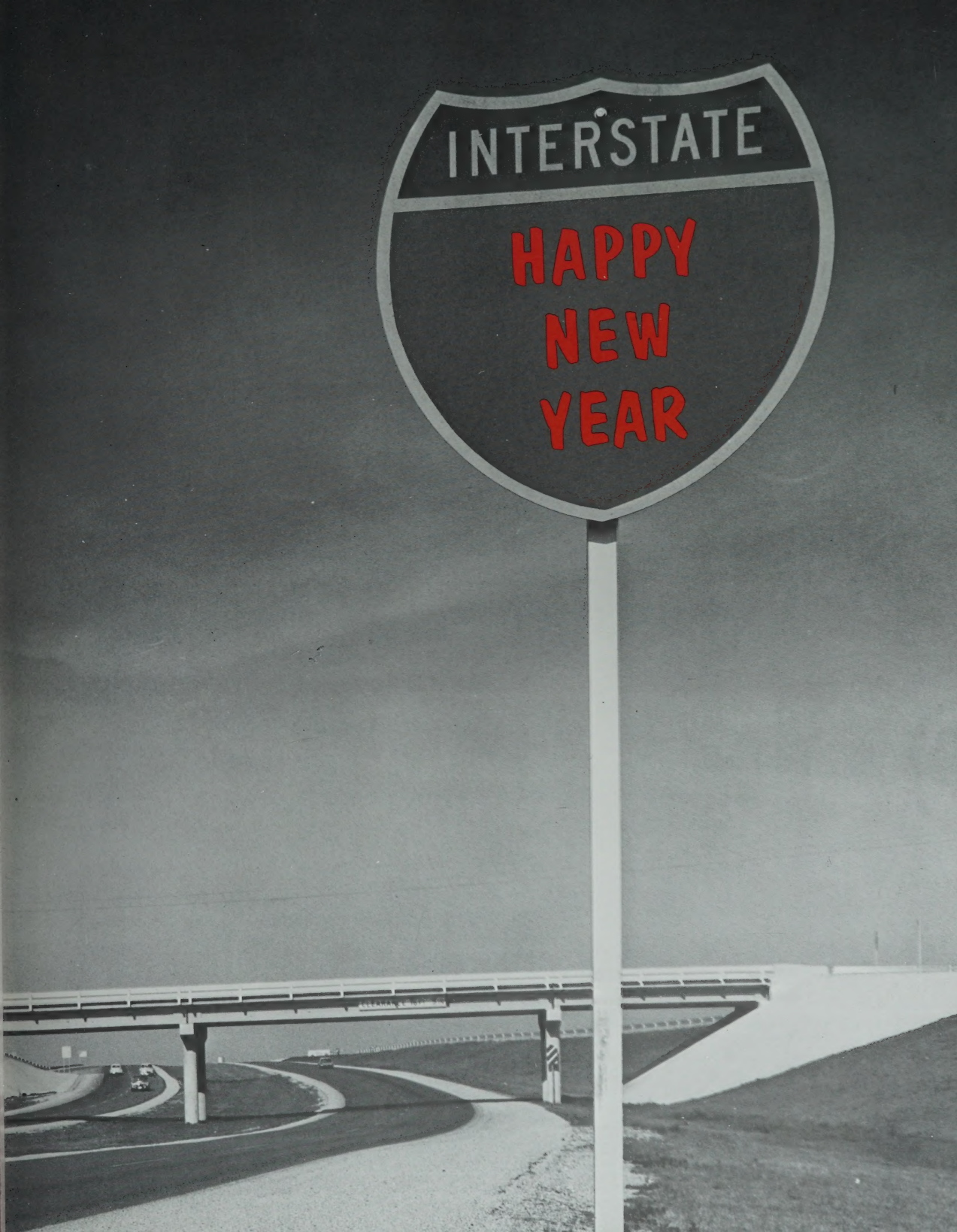
Gordon Jaynes
Kenai, Alaska

• I was on my way home from El Paso on Highway 90 between Terrell and Mineola, ran over a bottle and cut a tire. It was raining. Being 81 years old I could not operate the jack. I had three old ladies with me. I walked half a mile down the road to a filling station, but the boy said he could not put the spare tire on.

Now what I want you to know is when I got back to my car two of your employes in a pickup truck had driven up, got out in the rain, put on the spare tire, and had gone. I did not see them. They would not take any pay, and they were most pleasant and courteous to my wife and friends.

Just want you to know we appreciate that very much, and hope to travel more in Texas this year.

A. L. Waring
Hughes, Arkansas


INTERSTATE
HAPPY
NEW
YEAR

A Photogrammetry plane's camera captured this dramatic view of El Paso, showing the Franklin Mountains rising abruptly from the plain and the way cleared for I.H. 10 along railroad tracks near the downtown area.